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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/672,121 | 09/26/2003 | Chia-Pin Chiu | 884.465US2 | 7747 |

7590 10/04/2004

Schwegman, Lundberg, Woessner & Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55402

EXAMINER

MCKINNON, TERRELL L

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3743

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,121

Applicant(s)

CHIU ET AL.

Examiner

Terrell L Mckinnon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/26/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Receipt is acknowledged of applicant's amendment filed August 13, 2004.

Claims 1-18 are pending and an action on the merits is as follows.

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the following grounds of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-7, 9-11, 13-15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al. (U.S. 5,026,748).

Adams discloses a thermally conductive adhesive comprising all of the applicant's claimed and disclosed limitations of the instant invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 4, 8, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al. (U.S. 5,026,748) in view of Ameen et al. (U.S. 5,545,473).

Adam's invention discloses all of the claimed limitations from above except for the thermal conducting material comprising a second distribution of thermally conductive particles includes at least one particle selected from the group consisting of aluminum nitride (AlN), aluminum oxide (Al₂O₃), boron nitride (BN), aluminum, and copper.

However, Ameen teaches the use of a second distribution of particles includes at least one particle selected from the group consisting of aluminum nitride, aluminum oxide, boron nitride, silver, diamond, or aluminum and copper (column 4, lines 31-38).

Given the teachings of Ameen, it would have been obvious to one of ordinary skill in the art at the time of the invention modify the thermally conductive adhesive of

Adams with the thermal conducting material comprising a second distribution of thermally conductive particles includes at least one particle selected from the group consisting of aluminum nitride (AlN), aluminum oxide (Al₂O₃), boron nitride (BN), aluminum, and copper.

Doing so would provide enhance heat transfer and conduction through the interface material.

Response to Arguments

Applicant's arguments filed August 13, 2004 have been fully considered but they are not persuasive.

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Applicant's states, "the rejection states that Adams discloses a thermally conductive adhesive comprising all of the applicant's claimed limitations. Adams appears to disclose an adhesive resin including carbon fibers, however, Adams does not show, teach or suggest a viscous matrix material including a substantial volume of thermal grease".

Adams invention discloses a thermally conductive resin, in which a resin¹ is defined as:

1. Any of numerous clear to translucent yellow or brown, solid or semisolid, **viscous substances** of plant origin, such as copal, rosin, and amber, used principally in lacquers, varnishes, inks, **adhesives**, synthetic plastics, and pharmaceuticals.
2. **Any of numerous physically similar polymerized synthetics or chemically modified natural resins including thermoplastic materials such as polyvinyl, polystyrene, and polyethylene and thermosetting materials such as polyesters, epoxies, and silicones that are used with fillers, stabilizers, pigments, and other components to form plastics.**²

A grease² is defined as:

1. Soft or melted animal fat, especially after rendering.
2. **A thick oil or viscous substance**, especially when used as a lubricant.
3. a. The oily substance present in raw wool; suint. b. Raw wool that has not been cleansed of this oily substance.
4. *Slang*. Something, such as money or influence, that facilitates the attainment of an object or a desire: *accepted some grease to fix the outcome of the race*.

verb, transitive

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terrell L Mckinnon
Primary Examiner
Art Unit 3743
June 14, 2004